

## Harald Bode

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Harald Bode's career spans "three distinct eras in electronic musical instrument design", according to electronic music historian Dr. Tom Rhea.

Harald Bode, engineer and designer of audio tools, was born in 1909 in Hamburg, Germany. He received his degree in Physics at the University of Hamburg, followed by postgraduate work at the Technical University of Berlin.

Harald Bode designed electronic music instruments as early as 1937. His Warbo Formant organ was designed during his tenure at the Heinrich-Hertz-Institute for Oscillation Research at the Technische Hochschule in Berlin, and its innovative electronic design for allocating fewer voices than the keyboard has keys became archetypal for later instruments.

This was followed by the Melodium (1938), a monophonic touch sensitive keyboard instrument used extensively in film scores and "light" music.

Harald Bode worked on the Melochord from 1947-1953, an instrument that anticipated-by decades-many of the performance features of modern synthesizers. Bode's Melochord was one of only two instruments specifically commissioned for the first Electronic Music Studio in Cologne, Germany in 1953 and it was used by the first composer-experimenters in that studio such as Werner Meyer-Eppler and Herbert Eimert.

From 1950 onwards Harald Bode designed electronic instruments for Apparatwerk Bayern in Germany and the Estey Organ Co. in Brattleboro, Vermont, USA.

In 1950 he designed the Polychord, followed by the Bode Organ (1951), later known as the Estey Electronic Organ. It was also the basis for the Polychord III, the Cembaphon (1951), an amplified harpsichord with electrostatic pickups, The Tuttivox (1953) and the German version of Georges Jenny's Clavioline (1953).

The success of the Bode Organ brought Bode to the United States in 1954 as chief engineer, and later Vice President of the Estey Organ Corporation.

In 1959-60 he developed a modular synthesizer and sound processor, the concept of which was presented to the 1960 Convention of the Audio Engineering Society. As an executive at Wurlitzer Organ Co., Bode moved from Corinth, Mississippi to the Buffalo, New York area in 1961. In 1961 Harald Bode, recognizing the significance of transistor based technology, wrote an important paper that influenced the design of electronic musical instruments. Bode's ideas of modular and miniature self-contained transistor based machines was taken up and developed in the early 1960's by Robert Moog, Donald Buchla and others. The Bode Ring Modulator and early Frequency Shifters (1961) were in the early Columbia Princeton Center for Electronic Music of Vladimir Ussachevsky, Otto Luening, and Milton Babbitt, and were also found in many recording and electronic music studios around the world. These instruments were sold under

Bode's imprimatur as well as using the Moog name as a licensee. Harald Bode also worked as chief engineer at Bell Aerospace on the development of early micro circuitry.

Harald Bode retired in 1974, founded the Bode Sound Company and continued to pursue his own research. In 1977 he created the Bode Vocoder (Moog Vocoder). In 1981 he developed his last instrument, the Bode Barberpole Phaser. Bode published many papers both individually and in collaboration, with such engineers and designers as Robert Moog. Bode holds more than 50 US and foreign patents. He also collaborated with video artists Woody and Steina Vasulka and presented his work at the Audio Engineering Society, Media Study/Buffalo and the Experimental Television Center in Owego, New York.

The composer-performer Gordon Mumma referred to Harald Bode as an "engineering hero" due to his development of electronic musical instruments. Composers and performers around the world explicitly acknowledge Harald Bode's influence by using his instruments today. And they implicitly acknowledge this pioneer of three eras of electronic musical instrument design by using virtual (software) systems that have incorporated Harald Bode's ideas.

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